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ABSTRACT

This module on tube feedings is intended for use in inservice or continuing education programs for persons who work in long-term care. Instructor information, including teaching suggestions and a listing of recommended audiovisual materials and their sources appear first. The module goal and objectives are then provided. A brief discussion follows of the care and feeding of the patient with a nasogastric tube or gastrostomy tube, including the principles of insertion of a nasogastric tube and the administration of nourishment and/or medications via nasogastric or ostomy routes, and considerations and suggestions for resident care. This discussion is intended for use as a lecture or participant reading. Other contents include a vocabulary exercise, charts of oral nutritional supplements and common medications for skin irritation, and a worksheet, all of which are suitable for reproduction for use as handouts. (YLB)

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TUBE FEEDINGS

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Instructor Information

This material is intended for use in inservice or continuing education for persons who work in long term care. This module reviews the care and feeding of the patient with an N/G tube or gastrostomy tube. The charts may be duplicated for use as a teaching aid. The worksheet is to be completed with the instructor.

Audiovisual Material

#N99 Nasogastric Intubation and Tube Feeding—cartridge $25, Peshak Films Ltd., 993 off—Bradley Road, Lane Forest, Illinois 60045, 312/362-6552

Tube Feedings

Goal

The goal of this module is to review several different methods of providing nourishment to the resident in a long term care facility via nasogastric tubes or tubes inserted by surgical procedure along the digestive tract. To provide for the nutritional status as well as the comfort and safety of the resident, the health care worker needs to be knowledgeable of the principles of insertion of a nasogastric tube and the administration of nourishment and/or medications via nasogastric or ostomy routes.

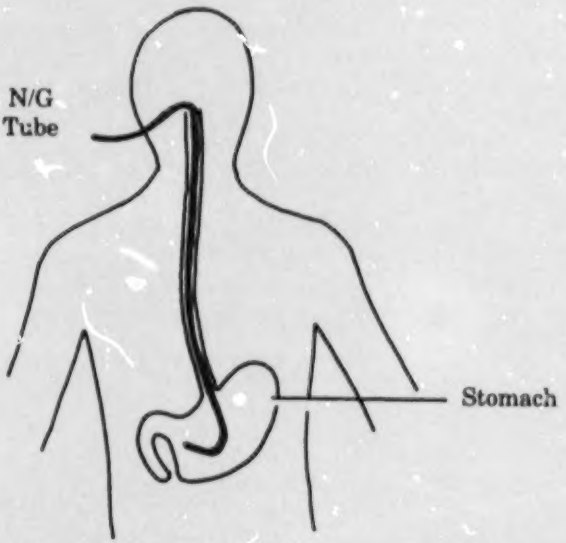
Objectives

After completing this inservice program, the participant will be able to:

- Distinguish between nasogastric, gastrostomy, and jejunostomy tube feeding routes.
- Describe three procedures to ascertain proper placement of the nasogastric tube.
- Utilize a mannequin to demonstrate one method of feeding the resident per nasogastric route, providing for the comfort and safety of that person.
- Utilize a mannequin to demonstrate one method of feeding the resident per gastrostomy providing for the comfort and safety of that person.

I. General Discussion

A. Nasogastric tubes—To insure and provide for the nutritional needs of some residents in long term care facilities, it is sometimes necessary for the health care worker to administer foods, medications, and liquids by means of a tube which is passed through the nostril into the stomach. These nasogastric tubes can be inserted by a nurse or physician who is competent and aware of the dangers involved. The procedure of intubation can be traumatic to the resident if passed through the trachea (windpipe) into the lung.

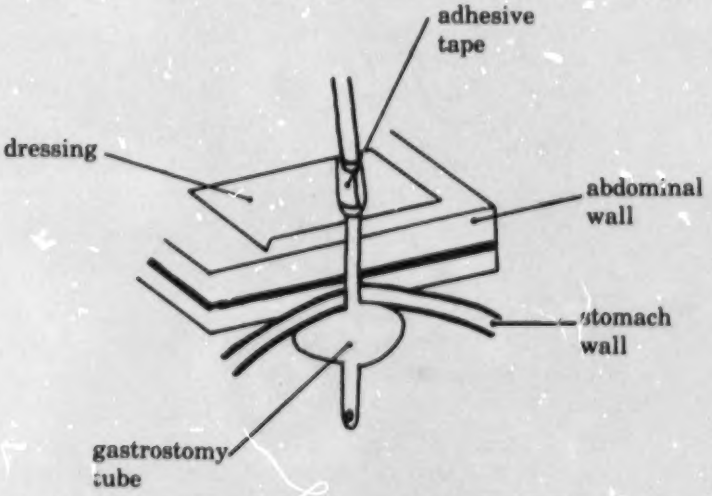


B. Gastrostomy or jejunostomy tubes—Tubes may be inserted surgically into the stomach or small intestine. Surgical insertion requires penetrating the peritoneum, a smooth membrane that lines the abdominal cavity and covers and protects the organs contained in them. Surgical insertion of a tube is performed by a physician when long term nutritional maintenance is desired. Any permanent opening which penetrates the peritoneum and digestive system, opening onto the skin, may leak gastric or digestive juices.

These gastric or digestive secretions have the potential to erode the skin causing redness and excoriation. Daily cleansing with soap and water around the stoma or opening is necessary to protect the resident's skin from deteriorating. At times it may be necessary to use skin protectants such as karya powder or zinc oxide to aid in protection and healing of excoriations.

The resident needs to be observed frequently for any signs of excoriation around the stoma (opening). Severe excoriation may develop into a fistula (abnormal opening between the skin and the abdomen).

The tube itself may be a catheter which can be inflated to hold it in place. Some tubes are held in place with a suture. Feedings, medications and fluids are then administered through this tube.



II. Problems of Residents Which Require Tube Feedings:

A. Difficulties with ingestion—Residents of long term care facilities who require tube feedings are those whose digestive tract is functioning, but are unable to ingest a sufficient amount of food or fluids to provide for proper nutrition. Insufficient ability to ingest or swallow may be caused by
   1. cardiovascular accident (CVA) with brain injury that affects swallowing by causing paralysis
   2. coma
   3. cancer of the mouth or esophagus
   4. post-operative laryngectomy
   5. mental disorders in which the patient refuses to eat
   6. fractured jaw

B. Conditions which contraindicate tube feedings
   1. intestinal obstruction
   2. paralyzed bowel
   3. intractable vomiting

III. Procedure for Insertion of a Nasogastric Tube:

A. Gather materials
   1. levine or feeding tube
   2. asepto syringe
   3. lubricating jelly
   4. kidney basin
   5. clamp
   6. adhesive tape
   7. tissues
   8. glass of water with straw

B. Explain procedure to the resident. If resident is conscious, agree to some predetermined signal such as a hand slap that the resident can give to indicate he is experiencing difficulty in breathing.

C. Place resident in sitting position. Tube must be measured for insertion. A strip of tape may be placed 18 inches from the tip. The length of insertion has been defined by Hansen in "Drugs" Nurses Reference Library as the midway point between the 50 cm. mark on the tube and the traditional distance from the tip of the nose to the earlobe to the xiphoid process.

D. Protect resident by placing a towel across chest and removing dentures.

E. Lubricate tip of tube approximately 10 cm. and find natural loop of tube tip. Use water soluable lubricant such as K-Y jelly.

F. Introduce tube gently through nostril aiming down and back.

G. Encourage resident to swallow or drink water while tube is being passed.

H. If resident coughs or develops cyanosis, withdraw tube as it may be in trachea.

I. Ease tube into stomach to proper length.

J. Insert end of tube into a glass of water. If regular bubbling occurs, tube is in trachea and must be removed.

K. Connect asepto syringe to tube and aspirate to obtain stomach contents.

L. Using a stethoscope placed over the stomach, insert 20 cc of air and auscultate air as it enters stomach with a stethoscope.

M. Pour small amount of water into tube and allow a few drops to enter stomach. If patient coughs, tube is in trachea and must be repositioned. When assured tube is in stomach, flex tube sharply at end of syringe to prevent solution from running completely into tube and allowing air to enter. Clamp tubing.

IV. Tube Feeding:

A. Gather materials
   A. towel
   2. asepto syringe
   3. graduated pitcher
   4. formula at room temperature
   5. stethoscope

B. Elevate head 30°

C. Check for patency of tube in stomach
   1. inject 20 cc air into tube and auscultate air in stomach
   2. aspirate small amount stomach contents
   3. place end of tube in a glass of water. Regular bubbles indicate tube may be in trachea.

D. Insert asepto syringe into end of tube and flex tubing, pour small amount of water into asepto, unclamp tubing.

E. Fill asepto with formula and allow to flow by gravity into residents stomach. Flow can be regulated by raising or lowering the asepto.

F. Add more formula before asepto is completely empty (this prevents air from entering tubing). Continue adding formula until prescribed amount is given.

G. Pour 1 to 2 ounces of water into tubing to clear it. (Formula left in tubing will clog and spoil.)

H. Clamp off tube before air enters.

I. Cover end of tube with a 4 × 4 gauze and rubber band, or insert plug.

J. Chart time, type, and amount of feeding and how it was tolerated by the resident.

V. Procedure for Administering Gastrostomy Feedings:

A. Gather materials
   1. funnel or glass asepto syringe
   2. graduated pitcher
   3. glass of water (room temperature)
   4. prescribed formula (formula can be warmed by placing container in a basin of warm water)
   5. bath towel
   6. clamp
   7. special plug for tubing or gauze square and rubber band

B. Place resident in Fowler's position. Fold bedclothes down. Uncover gastrostomy tube and place towel over residents upper abdomen.

C. Unclamp gastrostomy tube and attach funnel or asepto syringe.

D. Pour prescribed amount of formula into tilted funnel or asepto.

E. Flow may be regulated by raising or lowering funnel. NEVER FORCE THE FLOW.

F. If formula will not flow in, ask the resident to take some deep breaths and tilt to the side. The tube may be lying against the stomach wall or the stomach muscle may be contracted, blocking tube lumen. If formula will not flow in, stop the feeding and report the problem to your charge nurse or supervisor.

G. After each feeding, irrigate tube with water.

H. Clamp the tube to prevent gastric contents and irritating gastric juice from touching the skin.

I. Insert a special plug or apply a 4 × 4 gauze square and secure with a rubber band to keep end of tube clean and dry.

J. Coil tubing and attach to abdomen with small piece of adhesive tape.

K. Resident may be more comfortable with an abdominal binder if ambulatory.

L. Chart time, amount and type of feeding and how it was tolerated by the resident.

REMEMBER—NEVER GIVE HOT OR COLD LIQUIDS THROUGH A GASTROSTOMY OR NASOGASTRIC TUBE.

VI. Variations of Administration:

There are several methods of administering solutions to the residents with a nasogastric or gastrostomy tube other than the use of an asepto and graduated pitcher.

A. Continuous drip.—A feeding is infused over a 24 hour period by means of a mechanical pump. The advantage of a continuous drip is that this method is less likely to cause diarrhea and a high residue. The rate, amount and formula strength is prescribed by the physician. The tube must be

checked every four hours for proper location. Gastric residual must be checked every four hours. If more than 150 cc's are aspirated the infusion must be stopped for one hour. Elevate head of bed 30° at all times to prevent aspiration pneumonia.

B. Gravity drip—The formula is connected to the feeding tube much like an intravenous solution. A drip chamber regulates the flow and amount of solution. Usually the solution is given over a one hour period.

VII. Complications of Tube Feedings:

A. Diarrhea can result from excessive protein intake, medications, bacterial infections, and disturbed electrolytes.

B. Dehydration can result from diarrhea and inadequate fluid intake.

C. Tube feeding syndrome can result from too much protein intake and too little fluid intake. Symptoms of tube feeding syndrome are:
   1. confusion
   2. decreased consciousness
   3. dehydration

D. Aspiration pneumonia—inflammation of lung due to entrance of foreign material (food).
   1. head of bed must be elevated 30° at all times during continuous drip feedings to prevent aspiration pneumonia
   2. during bolus or gravity drip, the head of the bed should be elevated for 30 minutes
   3. the resident who is comatose or severly debilitated has less risk of aspiration pneumonia by the use of a nasoenteric (nose to small intestine) gastrostomy or jejunostomy feedings

E. GI disturbances
   1. hot liquids may burn mucus membranes
   2. cold liquids may cause gas, cramping, and distention
   3. nausea may be alleviated by stopping or slowing the feeding
   4. constipation—decreased frequency of bowel movements may be expected, but adding bulk to the diet may be necessary by changing the formula to include more residue

VIII. Gastrostomy Feeding Products

The physician orders the type and amount of feeding. Usually, feedings are given in small amounts initially and increased as the patient's tolerance increases. As the patient is able to increase the amount of food, the interval between feedings becomes longer, so that the patient may be on a 4 hour schedule and receive between 250-500 cc per feeding. Total intake should be between 2500-3500 cc per day, including water.

A. Prepared products

1. Ensure
   a. Ensure—liquid nutrition which may be stored and fed at room temperature. Water does not need to be added. Once opened, unused portions must be refrigerated and used within 48 hours.
   b. Ensure—powder, $^3/_4$ cup water mixed with $^1/_2$ cup Ensure powder yields one 8 oz. glassfull. Reconstituted Ensure should be used promptly or covered, refrigerated and used within 24 hours. Opened cans of powder should be used within 3 weeks. Opened cans should be covered and stored in a cool, dry place, but not refrigerated.
   c. Ensure Plus—ready to use, high caloric, liquid nutrition. Caloric value is 50% more than most other liquid feedings.
2. Standard Vivonex—soluble *powder* available in packets for individual servings when mixed with water. The product is rapidly utilized with essentially no residue. Serve at room temperature by continuous drip via Vivonex delivery system or by n/g tube, gastrostomy or jejunostomy. If resident experiences diarrhea, Vivonex may need to be overdiluted, gradually titrating to full strength.
3. Isocal—liquid, ready to use, requires no mixing, available in 8, 12, and 32 fl. oz. cans. Administer at room temperature. Feedings may be given by continuous drip or at intervals.

B. Regular Foods

Because prepared powders and solutions are usually more expensive than regular food, physicians will sometimes order regular or special diets from the dietary department. Once transferred to the floor, the health care worker is responsible for pureeing the food in a blender. Diabetic and low sodium diets can also be prepared in this manner. If this type of preparation is ordered for the resident, it is important to get a definite order from the physician for the amount of water given the patient. The advantage of a normal diet in tube feedings is that it provides bulk for the intestines and aids in defecation.

IX. Administering Medication via Gastrostomy or N/G Tube:

A. Check n/g tube to insure that it is placed in stomach.

B. Tablets must be crushed and mixed with water before administering to a patient with a nasogastric or gastrostomy tube.

C. Capsules may be opened and the contents mixed with water before administration.

D. Enteric coated tablets may not be crushed and therefore are not to be administered per gastrostomy or nasogastric tube.

E. Time released tablets or capsules may not be crushed, nor administered per n/g or gastrostomy tube.

F. Many medications can be ordered in liquid form for easier administration.

G. If the medication is not in liquid form, consult with the resident's physician or charge nurse before administration.

H. After administering medication, clear tubing by administering 1-2 ounces of water after medication has been given.

X. Care of Equipment:

A. Kangaroo Tube Feeding Set
   1. rinse bag with water
   2. hang to dry
   3. bag may be used several times

B. Asepto and Graduated Pitcher
   1. asepto and pitcher should be washed with soap and hot water
   2. dry well with clean towel
   3. wrap asepto syringe in clean towel and place in treatment room, or kitchen

OR

   1. rinse asepto and pitcher with water and place in dishwasher
   2. remove articles at end of cycle, wrap in clean towel and store in kitchen or clean utility room till needed for next feeding

Word Power

Increase your word power. Match the word in Column A to the definition in Column B.

Column A	Column B
1. peritoneum	____ surgical opening in abdominal wall
2. excoriation	____ membrane which covers organs and lines abdominal cavity
3. stoma	____ abnormal opening between skin and abdomen
4. fistula	____ surgical creation of artificial opening to stomach
5. gastrostomy	____ reddness or irritation of skin

Care of the resident with n/g tube or gastrostomy

Considerations	Suggestions
The mouth and mucus membranes become dry because these residents do not take anything by mouth.	Give frequent mouth care. The resident may use toothpaste or mouth wash as long as he spits it out.
The nose can become encrusted with mucus around the tube.	Applicators dipped in water may be used to clean the nostrils.
The throat may become sore and patients with tubes in place often have hoarseness and difficulty swallowing.	With the doctor's permission, the resident may be allowed to have ice chips, saline gargles, ice collars, etc. to relieve complaints.
The resident may be allowed out of bed.	With the tube clamped, the patient may ambulate as ordered.
Feeding the resident too rapidly will cause abdominal distress.	Adjust rate of flow by raising or lowering asepto.
If n/g tube not properly placed, resident may aspirate.	Observe resident for any signs of distress, coughing, choking, or cyanosis.
n/v after feeding may mean resident is receiving too much fluid.	Call physician for order change.
Water or food should be kept at room temperature or only slightly warmer.	Cold water or food will cause abdominal cramping. Hot water or food will burn the mucus membranes of the stomach.
Do *not* force fluid or food into tubing of n/g or gastrostomy.	Tube may not be in proper position or something may be blocking tubing. Call nurse or physician.
Gastrostomy stoma may become red and irritated.	Observe stoma for irritation, notify your charge nurse or physician immediately. Digestive juices erode skin.

Oral Nutritional Supplements

These products contain measured amounts of protein, carbohydrates, fats, vitamins, minerals and electrolytes. They are used either alone or as a supplement to the regular diet in which supplementary nutrition is needed. Many of these product formulations can be used for tube feeding.

All tube feedings are prescribed by the physician as to type, amount, and schedule of feedings.

Powders

Sustagen Powder
Sustacal Powder
Meritene Powder
Lonalac Powder
Ensure Powder

Vivonex HN Powder
Gevral Protein Powder

Powders must be mixed or blended with liquid such as water, milk or juice

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Liquids

Nutri 1000
Meritene Liquid
Formula 2 Blended Foods

Osmolite Liquid
Travasorb Liquid
Isocal Liquid Diet
Sustacal Liquid
Renu Liquid
Ensure Liquid

Commercially prepared pureed diet.

Compleat B—blenderized tube feeding—pureed beef, given beans, peaches, peas, nonfat dry milk, corn oil, sucrose, orange juice, maltodextrin

Common Medications For Skin Irritation

Topical Corticosteroids

Action: anti-inflammatory, antipruritic, vasoconstrictive

Lidex	Apply sparingly, avoid getting ointment in or around eyes.
Cordran	Prolonged exposure to cortisone preparations may produce systemic effects.
Valisone	If burning, irritation, or infection developes, contact physician.
Hydrocortisone	
Kenalog	Topical steroids should not be used if patient has markedly impaired circulation.

Topical Anti-Infectives

Action: antibiotic preparation used to prevent infection and to control susceptible micro-organisms

Garamycin	Unless directed otherwise, cleanse skin prior to applying ointment.
Neomycin	If rash develops or condition worsens, notify physician.
Myciquent	Discontinue if itching, burning, or rash develops.

Worksheet

1. Five conditions which may necessitate the use of a nasogastric tube or gastrostomy tube are:
   1.
   2.
   3.
   4.
   5.

2. Three procedures that ascertain proper placement of a nasogastric tube are:
   1.
   2.
   3.

3. The nasogastric tube passes through the pharnyx, esophagus, and terminates in the _____.

4. Intubation can be a traumatic procedure to the resident if the tube enters the _____.

5. Coughing, choking, or a bluish color on the lips may indicate the resident is _____.

6. The tubing is kept pinched or clamped off when no food is going in to prevent _____ in the stomach.

7. Cold liquids will cause _____.

8. Giving the fluid too rapidly can cause _____.

9. The solution must be allowed to run in by _____, never use force.

10. The physician orders the _____, _____ and _____ the feedings are given.

Charting Example:

Date	Time	
5/28/82	8:00 a.m.	200 c.c. Meritine liquid given per n/g tube. Feeding tolerated well with no c/o. Tubing in place and clamped. _____ signature

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